Please amend the paragraph starting at page 1, line 13 and ending at line 22, as follows. --In an image forming apparatus such as a copying machine, a laser beam printer or the like of an electrophotographic type, an electrophotographic photosensitive member is exposed to light modulated in accordance with image information so that ~~and~~ an electrostatic latent image is formed thereon, and the latent image is developed with a developer (toner) by developing means. The developed image is transferred onto a recording material, such as paper from said photosensitive member.--

Please amend the paragraph starting at page 1, line 23 and ending at page 2, line 8, as follows.

--The process cartridge may further ~~comprises~~ comprise a toner accommodating portion and a residual toner container for the purpose of easy maintenance and exchange of the consumables, such as toner. In the case of a color image forming apparatus, there are provided a plurality of developing means, and the ~~degrees of wearings~~ degree of wear of the developing means may be different. The ~~degrees of wearins~~ degree of wear of the photosensitive drum and the developing means may be different. In view of them, some parts may be formed into a smaller cartridge, for example, the developing cartridge for each color, the cleaning means and the photosensitive drum may be formed into a cartridge (photosensitive member cartridge).--

Please amend the paragraph starting at page 2, line 10 and ending at line 19, as follows.

--It is known that storing means (memory) may be carried on the cartridge, and the information peculiar to the cartridge is managed. In U.S. Patent No. 5272503, the degree of use of the cartridge is stored in the memory, in accordance with which various process conditions are controlled. For example, the charging current value and/or the exposure amount is adjusted. The

same control is carried out if the degree of use is the same, despite the fact that the cartridge is different.--

Please amend the paragraph starting at page 3, line 7 and ending at line 12, as follows.

--~~Accordkingl~~ Accordingly, it is a principal object of the present invention to provide an image forming apparatus and a cartridge detachably mountable to the main assembly of the image forming apparatus, wherein ~~an~~ the image quality is stabilized despite a degree of usage of the cartridge.--

Please amend the paragraph starting at page 3, line 13 and ending at line 17, as follows.

--It is another object of the present invention to provide an image forming apparatus and a cartridge detachably mountable to the main assembly of the image forming apparatus, wherein ~~an~~ the image quality is stabilized despite the difference of manufacturing lots.--

Please amend the paragraph starting at page 3, line 18 and ending at page 4, line 1, as follows.

--According to an aspect of the present invention, there is provided an image forming apparatus comprising image forming means for forming an image on a recording material, wherein at least a part of the image forming means is in the form of a unit which is detachably mountable to a main assembly of the apparatus, ~~said~~ the apparatus comprising a memory, wherein ~~said~~ the memory is mounted to ~~said~~ the unit, wherein ~~said~~ the memory stores information relating to the timing at which a driving parameter of ~~said~~ the image forming means is changed.--

Please amend the paragraph starting at page 4, line 2 and ending at line 11, as follows.

--According to another aspect of the present invention, there is provided an image forming apparatus comprising forming means for forming an image on a recording material, wherein at least a part of ~~said~~ the image forming means is formed into a unit which is detachably mountable to a main assembly of the apparatus; memory, wherein ~~said~~ the memory is provided in ~~said~~ the unit, wherein ~~said~~ the memory stores information for setting a driving parameter for ~~said~~ the image forming means upon start of use of ~~said~~ the unit.--

Please amend the paragraph starting at page 4, line 12 and ending at line 20, as follows.

--According to a further aspect of the present invention, there is provided a unit detachably mountable to an image forming apparatus including image forming means for forming an image on a recording material, ~~said~~ the unit comprising at least part of ~~said~~ the image forming means; a memory; wherein ~~said~~ the memory stores information relating to timing for changing a driving parameter of ~~said~~ the image forming means.--

Please amend the paragraph starting at page 10, line 25 and ending at page 11, line 17, as follows.

--In this embodiment, the process cartridge C integrally comprises a developer container 4 and a waste toner container 6. The developer container 4 integrally holds: a photosensitive member in the form of a drum, that is, the photosensitive drum 1; a contact charge roller 2 for uniformly charging the photosensitive drum 1; and a development sleeve 5 which constitutes a developing means, and is placed virtually in contact with the photosensitive drum 1, its generatrix being parallel to that of the photosensitive drum 1. Further, the developer container 4 contains a developer T and rotationally supports the development sleeve 5. The waste toner container 6 ~~holds:~~ holds a cleaning blade which constitutes a cleaning means, and the residual

toner particles removed from the photosensitive drum 1 by the cleaning blade 10. This process cartridge C is removably installed into an installing means 101 (Figure 2) provided in the main assembly 100 of the image forming apparatus, by a user.--

Please amend the paragraph starting at page 12, line 8 and ending at page 13, line 5, as follows.

--The developer T stored in the developer container 4 in this embodiment is a nonmagnetic single component toner (hereinafter, toner) and is negatively chargeable. The ingredients of the developer T are copolymer of styrene-butyl-acrylate (100 parts in weight) as bonding resin, magnetic particles (80 parts in weight), monoazoic complex (2 parts in weight) as negative charge controlling agent, and polypropylene with low molecular weight (3 parts in weight) as wax. In production, these ingredients are mixed and melted in a double axis extruder heated to 140 °C. After cooling, the mixture is pulverized into relatively large particles by a hammer mill, and then, further pulverized into microscopic particles by a jet mill. The thus obtained microscopic particles are classified by air flow, collecting particles with a weight average diameter of 5.0 μm. Then, one part ~~in~~ by weight of microscopic hydrophobic silica particles is mixed by one part ~~in~~ by weight into 100 parts in weight of the classified particles with a weight average diameter of 5.0 μm with the use of a Henschel mixer to yield the developer T in this embodiment. In reality, the toner particles with a weight average particle diameter within a range of 3.5 - 7.0 μm (mostly, 6 μm) are used as the developer in this embodiment.--

Please amend the paragraph starting at page 13, line 6 and ending at line 12, as follows.

--The development bias applied to the development sleeve 5 is a combination of a DC voltage of -450 V, and an AC voltage with a rectangular waveform, a peak-to-peak voltage of

1600 V, and a frequency of 2300 Hz, when the gap between the photosensitive drum 1 and development sleeve 5 is approximately 300 μm, for example.--

Please amend the paragraph starting at page 17, line 11 and ending at line 19, as follows.

--The combination of the control section 24 and the communicating section 23 constitutes the control-communicating means for reading information from, or writing information into, the memory 22. The capacity of the memory 22 should be large enough to store a plurality of data, for example, cartridge identification data, which will be described later, or the values which represent the characteristics of each cartridge.--

Please amend the paragraph starting at page 18, line 11 and ending at line 20, as follows.

--Further, cartridge specifications which represent specific properties of each cartridge may be used as parameters for adjusting processing conditions, and they may be those attached to each cartridge when it is shipped from a factory. For example, they may be lot numbers of the photosensitive drum 1, the toner T, the development sleeve 5, and the charge roller 2, the specific value representing the sensitivity of the photosensitive drum 1, the threshold value, and the coefficient pertaining to the equation weighted by the lengths of ~~charge bias~~ the charge-bias application time and the ~~photosensitive drum~~ photosensitive-drum driving time.--

Please amend the paragraph starting at page 18, line 21 and ending at page 19, line 2, as follows.

--The processing conditions are controlled based on the relationship between the two sets of information stored in the memory 22. More specifically, the data within the memory 22 are computed by the control section 24 on the apparatus main assembly side, and the resultant

electrical signals are sent to appropriate processing units to change the high voltage output, the processing speed, the amount of laser light, and the like.--

Please amend the paragraph starting at page 19, line 20 and ending at page 20, line 7, as follows.

--Consequently, the photosensitive layer of the photosensitive drum 1 becomes gradually thinner with the apparatus usage. As the thickness of the photosensitive layer of the photosensitive drum 1 becomes less than a certain value, the photosensitive layer becomes inferior in its function. For example, the peripheral surface of the photosensitive drum 1 fails to be uniformly charged, displaying microscopic irregularities in terms of potential level, or reduces in the capacity to hold electrical charge, sometimes failing to be charged. Therefore, the length of the service lives of the image forming apparatus or a process cartridge corresponds to the print count, which accumulates before the thickness of the photosensitive layer reduces to its limit.--

Please amend the paragraph starting at page 20, line 8 and ending at line 23, as follows.

--It has been known that if the amount of the electrical discharge is reduced below a certain level, electrical discharge becomes unstable, and as a result, so-called sandy patches, that is, areas covered with minute black dots, appear in the resultant image. More specifically, a sandy patch means an image area covered with black dots, in an image outputted through a reversal development process, the positions of which correspond to the areas of the peripheral surface of the photosensitive drum 1 insufficiently charged because the amount of the electrical discharge caused by the charge roller 2 was too small. It has been known that the sandy patches are more apparent ~~which~~ when the peak-to-peak voltage of the oscillating voltage applied to the charge roller 2 is small.--

Please amend the paragraph starting at page 21, line 15 and ending at line 21, as follows.

--Shown below are the results of the tests conducted to study the relationship between the shaved amount of the photosensitive material and the total amount of the charge current, and the relationship between the total amount of the current necessary to prevent the appearance of the sandy ~~parches~~ patches and the print count.--

Please amend the paragraph starting at page 22, line 6 and ending at line 15, as follows.

--Figure 4 shows the relationship between the print count and the total amount of the charge current total ~~correspondent~~ corresponding to the nonappearance of the sandy patches. It is evident from Figure 4 that there are changes in the total amount of the charge current in regions A and B. It may be thought that these changes, that is, the appearance of the sandy patches, are traceable to the charge roller 2, and the thickness of the surface layer of the photosensitive drum 1.--

Please amend the paragraph starting at page 22, line 16 and ending at line 22, as follows.

--The dominant cause of the charges in the region A is charge roller 2. More specifically, as the print count increases, the charge roller 2 is contaminated with the external additive of the toner, the reversely charged toner, and paper dust, being changed in charging performance; in other words, the total amount of the charge current per unit of time is reduced ~~reduces~~.--

Please amend the paragraph starting at page 22, line 23 and ending at page 23, line 8, as follows.

--In the region B, the dominant cause of the changes is the photosensitive member. More specifically, each time a printing cycle is repeated, the peripheral surface of the photosensitive member is shaved by a small amount; the photosensitive layer, that is, the surface layer of the photosensitive member, becomes thinner. As the photosensitive layer becomes thinner, the impedance of the photosensitive member ~~reduces~~ is reduced, increasing the voltage applied to the photosensitive drum when charging the photosensitive drum. As a result, it becomes easier for electric discharge to occur. Consequently, the total amount of the charge current per unit of time decreases.--

Please amend the paragraph starting at page 23, line 9 and ending at line 17, as follows.

--As is evident from the above description, in order to extend the service life of the photosensitive member without sacrificing image quality, it is best to set the total amount of the charge current at the minimum value which does not ~~derogatorily~~ deleteriously affect image quality. For the purpose, the charge current value must be set in consideration of both the condition of the charge roller 2, and the thickness of the photosensitive layer of the photosensitive drum 1.--

Please amend the paragraph starting at page 24, line 4 and ending at line 8, as follows.

--(2) The threshold values pertaining to the drum usage data determined by the characteristics of the photosensitive drum 1 and charge roller 2, ~~an~~ and the coefficient pertaining to the drum usage data computing equation, are stored in the memory 22.--

Please amend the paragraph starting at page 24, line 9 and ending at line 23, as follows.

--(3) The amount of the cartridge usage is computed based on the length of time the charge bias is applied, the length of time the photosensitive drum 1 is driven, which are measured by the image forming apparatus main assembly 100, and the coefficient, and as the value of the thus obtained amount of the cartridge usage reaches the threshold value stored in the memory 22, the charge current value is switched. With this control, it is possible to charge the photosensitive drum 1 using as small as an amount of charge current as possible without sacrificing image quality, regardless of <u>the</u> differences among cartridges, and also regardless of <u>the</u> print count. Consequently, the service life of the photosensitive drum 1 can be extended.--

Please amend the paragraph starting at page 25, line 8 and ending at line 25, as follows.

--Figure 6 shows the information stored in the memory 22. Although there are various kinds of information storable in the memory 22, it is assumed that, in this embodiment, at least, the following information is stored: information A or the length of time the charge bias was applied; information B or the length of time the photosensitive member was rotated; coefficient $\varnothing$ pertaining to the drum usage amount computing equation; and α (information regarding timing) or the threshold value pertaining to the drum usage amount computing equation. The threshold value and coefficient change depending on the sensitivity, <u>the</u> material, and <u>the</u> thickness at the time of production, of the photosensitive drum 1, and the characteristics of the charge roller 2, and therefore, values in accordance with these factors and characteristics are written into the memory 22 at the time of cartridge manufacture.--

Please amend the paragraph starting at page 26, line 8 and ending at line 18, as follows.

--The drum usage data D is computed by the computing portion 26 using the information B or <u>data representing</u> the cumulative length of time the photosensitive member was

rotated ~~data~~, which is obtained from the photosensitive member rotation control portion 27, the information A or the cumulative length of time the charge bias was applied, which is obtained from the charge bias application time detecting portion 28, and a conversion equation: $D = A + (B \times \varnothing)$, which is weighted by the coefficient $\varnothing$. The results are stored in the memory 22 of the process cartridge C.--

Please amend the paragraph starting at page 29, line 4 and ending at line 17, as follows.

--Although current switching is done only once in this embodiment, it may done in a plurality of steps depending on the characteristics of individual cartridges. Further, the current value may be raised or lowered depending on the condition of each cartridge. Also, two or more drum usage data threshold values may be used, although only one is used in this embodiment. The threshold value varies depending on various factors, for example, the difference in the manufacture lot, and therefore, the threshold value stored in each cartridge in this embodiment is selected to reflect these factors, so that image quality can be maintained regardless of differences among cartridges and the length of their usage.--

Please amend the paragraph starting at page 35, line 22 and ending at page 36, line 7, as follows.

--(4) Thereafter, the amount of the cartridge usage (drum usage) is computed based on the length of time the charge bias is applied, the length of time the photosensitive drum 1 is driven, which are measured by the image forming apparatus main assembly, and the coefficient, and as the value of the thus obtained amount of the cartridge usage reaches the threshold value stored in the memory, the DC bias for charge and the DC bias for development are switched. With this control, it is possible to minimize the line width change which occurs in the initial period of a printing operation, and therefore, high quality is realized.--

Please amend the paragraph starting at page 37, line 20 and ending at page 38, line 4, as follows.

--The drum usage data D is computed by the computing portion 66 using the information B or <u>data representing</u> the cumulative length of time the photosensitive member was rotated ~~data~~, which is obtained from the photosensitive member rotation control portion 67, the information A or the cumulative length of time the charge bias was applied, which is obtained from the charge bias application time detecting portion 68, and a conversion equation weighted by a predetermined weighting coefficient ⌀ [[:]] <u>=</u> D - A + (B x ⌀). The results are stored in the memory 62 of the process cartridge C.--

Please amend the paragraph starting at page 39, line 3 and ending at page 40, line 9, as follows.

--As the process cartridge C is installed into the image forming apparatus L, the drum sensitivity detecting portion 60 within the control section of the main assembly reads out the sensitivity value in the memory 62. In this embodiment, the drum sensitivity is divided into three ranges, L, M and H, depending on the potential level VL of each photosensitive drum at the time of shipment. The potential level ranges are: H ~~= -~~ <u>≥</u> -120 V; M = ~~-120 -~~ <u>-120</u> <u>to</u> -170 V; and L [[=]] <u>≤</u> ~~-170 -~~ <u>- 170</u>. The charge and development DC voltages are varied according to each of the three drum sensitivity ranges, with reference to the sensitivity conversion table 70 in the control portion 65. Based on the relationship in Figure 15, the value of the unit (step) by which the development bias is varied is set to 20 V (one unit (step) of change = 20 V). In consideration of the fact that the increase in the fog caused by the bias variation must be prevented, it is necessary for both the charge bias and development bias to be varied by a predetermined unit of change, so that back contrast and development contrast remain constant. In this embodiment, in consideration of the values Max and Mini of the maximum and minimum densities, respectively, which can be inputted by a user, the unit (step) value by which the development and charge DC

voltages are varied are set as follows: development DC voltage variation unit = -20 V; charge DC voltage variation unit = -10V . As for the development DC voltage, when M = -450 V, the values of L and M are rendered lower or higher than the value of M by a unit of ±20 V, respectively. As for the charge DC voltage, when M = -600 V, the values of L and H are rendered lower or higher than the value of the M by a unit of ±10 V, respectively.--

Please amend the paragraph starting at page 40, line 19 and ending at line 24, as follows.

--(1) A sequence from the step of turning ON the power source on the main assembly to the computation step prior to the step of the image formation standby ON will be described. This sequence is also to be carried out immediately after ~~process cartridge~~ process-cartridge installation.--

Please amend the paragraph starting at page 44, line 9 and ending at line 10, as follows.

--S315: the development DC bias power source raises the voltage by -20 V;--

Please amend the paragraph starting at page 44, line 11 and ending at line 12, as follows.

--S316: the charge DC bias power source raises the voltage by -10 V;--

Please amend the paragraph starting at page 44, line 23 and ending at line 24, as follows.

--S318: the development DC bias power source raises the voltage by -40 V;--

Please amend the paragraph starting at page 44, line 25 and ending at line 26, as follows.

--S319: the charge DC bias power source raises <u>the</u> voltage by -20 V;--

Please amend the paragraph starting at page 46, line 3 and ending at line 4, as follows.

--S325: the development DC bias power source lowers <u>the</u> voltage by -20 V;--

Please amend the paragraph starting at page 46, line 21 and ending at line 22, as follows.

--S330: the development DC bias power source lowers <u>the</u> voltage by -20 V;--

Please amend the paragraph starting at page 46, line 23 and ending at line 24, as follows.

--S331: the charge DC bias power source lowers <u>the</u> voltage by -10 V;--

Please amend the paragraph starting at page 47, line 6 and ending at line 14, as follows.

--As described above, the charge and development DC biases applied in the initial period of an image forming operation are adjusted for each cartridge, according to the drum sensitivity information and drum usage data, prior to the ~~step of~~ image formation standby <u>step</u>. Thereafter, the biases are varied to proper levels in accordance with the characteristic value of each cartridge, during the operation, so that the line width remains stable.--

Please amend the paragraph starting at page 48, line 15 and ending at page 49, line 1, as follows.

--In the second embodiment, the amount of the charge and development DC voltage were varied on the basis of the drum usage amount as the usage data in the memory, and three characteristic values: the threshold value for the usage data, the coefficient, and the drum sensitivity information. However, in this embodiment, <u>the</u> drum usage amount threshold value record is used in addition to the above described information, which characterizes this embodiment. With the addition of the drum usage amount threshold value record, computation becomes unnecessary even prior to the step of "image formation standby ON", reducing the time before the first print can be produced.--

Please amend the paragraph starting at page 49, line 2 and ending at line 6, as follows.

--The three characteristic values: <u>the</u> threshold value for the usage, <u>the</u> coefficient, and <u>the</u> drum sensitivity information, are the same as those in the second embodiment, and therefore, their descriptions will be omitted here.--

Please amend the paragraph starting at page 52, line 23 and ending at line 24, as follows.

--S423: the development DC bias power source raises <u>the</u> voltage by -20 V;--

Please amend the paragraph starting at page 52, line 25 and ending at line 26, as follows.

--S424: the charge DC bias power source raises <u>the</u> voltage by -10 V;--

Please amend the paragraph starting at page 53, line 9 and ending at line 10, as follows.

--S426: the development DC bias power source raises <u>the</u> voltage by -40 V;--

Please amend the paragraph starting at page 53, line 11 and ending at line 12, as follows.

--S427: the charge DC bias power source raises the voltage by -20 V;--

Please amend the paragraph starting at page 54, line 13 and ending at line 14, as follows.

--S434: the development DC bias power source lowers the voltage by -20 V;--

Please amend the paragraph starting at page 54, line 15 and ending at line 16, as follows.

--S435: the charge DC bias power source lowers the voltage by -10 V;--

Please amend the paragraph starting at page 55, line 5 and ending at line 6, as follows.

--S442: the development DC bias power source lowers the voltage by -20 V;--

Please amend the paragraph starting at page 55, line 7 and ending at line 8, as follows.

--S443: the charge DC bias power source lowers the voltage by -10 V;--

Please amend the paragraph starting at page 56, line 7 and ending at line 8, as follows.

--S442: the development DC bias power source lowers the voltage by -20 V;--

Please amend the paragraph starting at page 56, line 9 and ending at line 10, as follows.

--S443: the charge DC bias power source lowers the voltage by -10 V;--

Please amend the paragraph starting at page 56, line 26 and ending at line 27, as follows.

--S442: the development DC bias power source lowers the voltage by -20 V;--

Please amend the paragraph starting at page 57, line 1 and ending at line 2, as follows.

--S443: the charge DC bias power source lowers the voltage by -10 V;--

Please amend the paragraph starting at page 58, line 2 and ending at line 7, as follows.

--(1) Cumulative length of the cartridge usage is computed from the length of the time the process cartridge C is driven in the image forming apparatus main assembly 100, using an equation, ~~an~~ and this cumulative length of the cartridge usage will be referred to as "drum usage amount".

Please amend the paragraph starting at page 58, line 8 and ending at line 15, as follows.

--(2) The process cartridge C is provided with a memory 22, in which the aforementioned threshold value pertaining to the usage amount determined by the combined characteristics of the photosensitive drum 1 and charge roller 2 in each cartridge, and a coefficient pertaining to the aforementioned equation determined by the characteristics of the photosensitive drum 1, are stored.--

Please amend the paragraph starting at page 59, line 18 and ending at page 60, line 2, as follows.

--Referring to Figure 25, a coefficient ⌀ pertaining to the drum usage computation equation, a threshold value α pertaining to drum usage amount, and information X pertaining to cartridge characteristics (hereinafter, "ID information"), are stored in the memory 22 of the

cartridge C. The ID information ~~means~~ is information for the image forming apparatus main assembly 100 to detect whether or not the cartridge C has been replaced. In other words, ~~if~~ it may be any type of information as long as it provides the identity of each cartridge. More specifically, it is a serial number of the cartridge C or the like.--

Please amend the paragraph starting at page 60, line 16 and ending at line 27, as follows.

--The drum usage data D is computed by the computing portion 26 using the information B or the cumulative length of time the photosensitive member was rotated, which is obtained from the photosensitive member rotation control portion 27, the information A or the cumulative length of time the charge bias was applied, which is obtained from the charge bias application time detecting portion 28, and a conversion equation weighted by the coefficient $\varnothing$ read out of the memory 22: $D = A + (B \times \varnothing)$. The results are ~~cumulative~~ cumulatively stored in the memory 13 within the apparatus main assembly 100.--

Please amend the paragraph starting at page 61, line 8 and ending at line 13, as follows.

--As long as the ID information X remains unaltered, the drum usage amount D continues to be ~~cumulative~~ cumulatively stored. When it is recognized that the ID information X has been altered, it is assumed that the cartridge has been replaced, and the value of the drum usage amount D is reset.--

Please amend the paragraph starting at page 69, line 23 and ending at page 70, line 10, as follows.

--(3) The initial levels of DC bias for charge and DC bias for development, are determined for each cartridge according to its drum sensitivity. Thereafter, the amount of the

cartridge usage is computed based on the length of time the charge bias is applied, the length of time the photosensitive drum 1 is driven, which are measured by the image forming apparatus main assembly, and the coefficient, and as the value of the thus obtained amount of the cartridge usage reaches the threshold value stored in the memory, the DC bias for charge and the DC bias for development are switched. With this control, it is possible to minimize the line width change ~~which~~ that occurs in the initial period of a printing operation, and therefore, high quality is realized.--

Please amend the paragraph starting at page 71, line 22 and ending at line 24, as follows.

--In this embodiment, the drum sensitivity is divided into three ranges: ~~H [= -]≥ -120 V;~~ ~~M = - 120 [-]~~ to ~~-170 V; and L[=]~~≤ ~~-170 [-]~~ H ≥ -120 V; M = -120 to -170V; and L ≤ -170.--

Please amend the paragraph starting at page 78, line 11 and ending at line 20, as follows.

--Further, in this embodiment, development voltage is varied in potential level to control the image forming process. However, the charge DC voltage may be varied as the same time as the development voltage in order to maintain the contrast between the potential levels of the charge voltage and development voltage. Further, the other factors, that is, the frequencies of the charge and development voltages, and the amount of exposure, may be altered to control the image forming process, which is obvious.--